Using **GPS measurements to** identify globs ionospheric storms in **near** real-time

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The solar wind interacts with the Earth's magnetosphere, eventually dissipating energy into the ionosphere and atmosphere. As a terminator, the ionosphere responds to magnetic storms, which is very important in understanding the energy coupling process bet wccn the sun and earth and in force.astir]g space weather changes. The worldwide GPS network, for the first time, makes near real-time global ionospheric TEC measurements a possibility. Based on these measurements, global ionospheric TEC maps are generated with time resolution from 5 min to hems. Using these maps, we can analyze the global evolution of ionospheric storms on temporal and spatial scales, which have been difficult to study before. Firstly, we will compare the global ionospheric features found from this study with previous investigations. Then wc will consider whether these large ionospheric perturbations arc driven by traveling ionospheric disturbances (TID) or by electric fields. Wc will also study tbc correlation between the TEC cnhanccn]cnts/depressions and geomagnetic disturbances or substorms. We have tried to classify storms, that took place in the last three years, based on their spatial patterns. We find that for certain types of storms (such as 'I'] D-driven), it is possible to identify them near onset and issue warning signals during the. early stages. Main attention has been paid cm northern hemispheric winter storms, Their common features and physical mechanisms arc being investigated.

1. 1996 Fall AGU Meeting

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